

Appl. No.: 10/627,166
Amdt. dated 05/30/06
Reply to Office Action of November 29, 2005

REMARKS/ARGUMENTS

As explained more fully below, Applicant has amended independent Claims 1, 9, 18, 26, 34, and 41, and the claims depending therefrom, to more clearly define the claimed invention. Applicant requests reconsideration of Claims 1, 3-14, 17, 18, 20-22, 24-27, 29, 32-34, 36, 37, and 39-46 in view of the Amendments and Remarks set forth herein.

The Objection to the Specification Should Be Withdrawn

The Office Action requests a substitute specification, asserting that the usage of tables in the figures (or drawings) separate from the specification is improper. The Office Action cites as support for this request MPEP 1.83(a) (since there is no MPEP 1.83(a), Applicant presumes the Office Action is referring to 37 CFR 1.83(a) *Content of Drawings*), 37 CFR 1.121(b) (or MPEP 714) and 37 CFR 1.58(a).

None of the cited provisions (*i.e.*, 37 CFR 1.83(a), 37 CFR 1.121(b) (or MPEP 714) or 37 CFR 1.58(a)) includes any requirement that tables be presented in the specification as opposed to the drawings. In this regard, 37 CFR 1.83(a) provides that "tables and sequence listings that are included in the specification are, except for applications filed under 35 U.S.C. 371, not permitted to be included in the drawings." (Emphasis provided). Under 37 CFR 1.84(d) *Graphic forms in drawings*, "[c]hemical or mathematical formulae, tables, and waveforms may be submitted as drawings and are subject to the same requirements as drawings." (Emphasis provided). Considering 37 CFR 1.83(a) in light of 37 CFR 1.84(d), it is clear that an applicant may chose to submit tables in the specification or drawings, but not both except for applications filed under 35 U.S.C. 371. This conclusion is confirmed by 37 CFR 1.58, which provides that "[t]he description portion of the specification may contain tables, but the same tables may only be included in both the drawings and description portion of the specification if the application was filed under 35 U.S.C. 371." (Emphasis provided).

Applicant respectfully submits that usage of tables in the drawings is proper under 37 CFR 1.84(d) and, accordingly, submits that the request in the Office Action for a substitute specification be withdrawn.

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The Rejections Under 35 USC § 112 First Paragraph Should Be Withdrawn

The Office Action rejects Claims 1, 3-14, 17, 18, 20-22, 24-27, 29, 32-34, 36, 37, and 39-46 under 35 U.S.C. § 112, first paragraph, asserting that the claims are not commensurate with an enabling disclosure nor do they enable one of ordinary skill in the art to make or practice the invention. Inasmuch as 35 U.S.C. § 112, first paragraph, principally sets forth requirements for the specification, Applicant submits that the rejection of Claims 1, 3-14, 17, 18, 20-22, 24-27, 29, 32-34, 36, 37, and 39-46 on the basis that the claims do not enable one of ordinary skill in the art to make or practice the invention is improper. As explained by the Court of Appeals for the Federal Circuit ("Federal Circuit") in *United States v. Teletronics, Inc.*, "[t]he test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation." *United States v. Teletronics, Inc.*, 857 F.2d 778, 785, 8 USPQ2d 1217, 1223 (Fed. Cir. 1988). Based upon the considerable direction and guidance provided by the specification, including nine (9) working examples, Applicant submits that the specification clearly provides an enabling disclosure allowing one of ordinary skill in the art to practice the invention without undue experimentation and that the claims are commensurate with this enabling disclosure.

In support of the rejection under 35 U.S.C. § 112, first paragraph, the Office Action asserts that "there are no examples showing how to make or practice this invention." Applicant disagrees. The specification discloses how to achieve a lightweight cement mix capable of forming a structural product with a high compressive strength on pages 14-18 using Figures 7A-9D. For example, Figure 7A, which is provided for purposes of example only and not limitation, illustrates the compressive strength data for seven compositions prepared using the corresponding bottom ash mixtures illustrated in Figures 6A and 6B. As illustrated in Figure 7A, all of the compositions have a seven-day compressive strength of at least 2,500 psi and a twenty-eight-day compressive strength of at least 4,000 psi except for composition nos. 1 and 7 and, thus, do provide an enabling disclosure of the invention as presently claimed. Furthermore, Figure 8A, when compared to Figure 7A, illustrates the effects of decreasing the amount of

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water, and Figure 9A, when compared to Figure 7A, illustrates the effects of varying the relative weights of the first and second portions of the bottom ash. Figures 7A, 7B, 8A, and 9A also disclose the relative quantities of cement, coarse and fine portions of the bottom ash, water, slump and percent air, as well as the weight per cubic foot of volume for each mixture. Moreover, contrary to the assertions in the Office Action that Figures 7A, 7B, 8A, and 9A do not provide specific particle sizes for the fine and coarse portions of the bottom ash used in each of the seven mixtures, Figure 7C provides a sieve analysis (*i.e.*, particle size analysis) for the fine and coarse portions of the bottom ash in each of the seven mixtures identified in Figure 7A and 7B; Figure 8B provides a sieve analysis for the fine and coarse portions of the bottom ash in the mixture identified in Figure 8A; and Figure 9B provides a sieve analysis for the fine and coarse portions of the bottom ash in the mixture identified in Figure 9A. The specification also discloses the type of cement (page 9, lines 24-29), the material composition of the bottom ash (page 10, lines 1-19), the particle size distribution ranges for the fine and coarse portions of the bottom ash (page 10, line 20 – page 12, line 2), and the water content range (page 12, lines 18-28) for various embodiments of the invention. Furthermore, as evidenced by the references cited in the Office Action, the scope of the term “bottom ash” is understood by a person of ordinary skill in the art.

The Office Action also asserts that “[t]here are no amounts of bottom ash, cement (nor the specific type – is it hydraulic, and is the type including Portland cement, alumina cement, Magnesia cement, phosphate cement, gypsum, etc.) and water that are critical to obtain the claimed values for compressive strengths.” In this regard, independent Claims 1, 9, 18, 26, 34, 41, each recite the critical feature that the bottom ash comprise a fine portion and a coarse portion. While the specification discloses ranges for the amounts of bottom ash, cement and water that may be used to achieve the claimed compressive strengths, as evidenced by the nine (9) working examples, the specific amounts of bottom ash, cement and water to obtain the claimed values for compressive strengths can vary within these ranges. MPEP 2164.08(c) provides that only features taught by the specification as being critical are required to be recited in the claims.

In view of the considerable direction and guidance provided by the specification for

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making and using the claimed invention, including nine (9) working examples, Applicant submits that the specification provides an enabling disclosure allowing one of ordinary skill in the art to practice the invention without undue experimentation, as required by 35 U.S.C. § 112, first paragraph, and that the claims are commensurate with this enabling disclosure. Accordingly, Applicant respectfully submits that the rejection under 35 U.S.C. § 112, first paragraph, should be withdrawn.

The Rejections under 35 USC §112 Second Paragraph Should Be Withdrawn

The Office Action rejects Claims 1, 3-14, 17, 18, 20-22, 24-27, 29, 32-34, 36, 37, and 39-46 under 35 USC §112, second paragraph, as failing to set forth the subject matter the Applicant regards as the invention.

Specifically, the Office Action asserts that use of the term "effective amount" for bottom ash, cement, and water is indefinite. The MPEP 2173.05(c)(III) explains that the phrase "an effective amount" is definite where the disclosure provides "guidelines as to the intended utilities and how the uses could be achieved." The specification of the present application provides such guidelines as to the intended utilities and how the uses can be achieved. For example, the disclosure provides guidelines for the intended utilities at page 14, lines 1-12, including forming high strength structural products, grout, etc. The disclosure also provides guidelines for how the uses can be achieved, including selecting the cement (page 9, lines 24-29), sizing the bottom ash (page 10, line 20 – page 12, line 2, and in Figure 3), mixing the cement, bottom ash, and water (page 12, lines 3-28), and forming a structural product of suitable compressive strength (pages 14-18 and Figures 7A-9D). While Applicant disagrees that the phrase "effective amount" for bottom ash, cement, and water is indefinite, given the guidelines provide in the disclosure, in order to further the prosecution of the present application, Applicant has amended independent Claims 1, 9, 18, 26, 34, and 41 to recite the relative ratio of bottom ash to cement as 2:1 to 2:3. Applicant reserves the right to submit claims in the present application or in a continuation application claiming priority thereto reciting the phrase "effective amount" for bottom ash, cement, and water.

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The Office Action also asserts that the term "cement" is indefinite in the claims. Applicant disagrees, as the specification discloses the type of cement (page 9, lines 24-29). While Applicant disagrees that the term "cement" is indefinite, given that the specification discloses the type of cement, in order to further the prosecution of the present application, Applicant has amended independent Claims 1, 9, 18, 26, 34, and 41 to recite "Portland" as the type of cement. Applicant reserves the right to submit claims in the present application or in a continuation application claiming priority thereto reciting "cement" commensurate with the scope of the application as originally filed.

The Office Action indicates that use of the term "portion" for the fine and coarse amounts of the bottom ash is indefinite. Under *Vitronics Corp.*, "[a]lthough words in a claim are generally given their ordinary and customary meaning, a patentee may choose to be his own lexicographer and use terms in a manner other than their ordinary meaning, as long as the special definition of the term is clearly stated in the patent specification or file history." *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). Throughout the specification the term portion is used to describe the first or coarse portion of bottom ash consisting primarily of coarse material ranging in size from 0.003 to 0.75 inches and to describe the second or fine portion of bottom ash consisting primarily of fine material that is less than .006 inches in size (for example, see page 12, lines 29 and 30 – page 13, lines 1-9). Therefore, and in accordance with the holding of the Federal Circuit in *Vitronics*, Applicant submits that the terms "fine portion" and "coarse portion" are clearly defined by the Applicant in the specification and, thus, are definite.

The Office Action also asserts that Applicant must disclose the particle size or particle size range Applicant considers coarse and the particle size or particle size range Applicant considers fine with respect to bottom ash. Applicant disagrees, as the specification discloses the particle size distribution ranges for the fine and coarse portions of the bottom ash (page 10, line 20 – page 12, line 2). As explained in MPEP 2173.04, "[b]readth of a claim is not to be equated with indefiniteness. *In re Miller*, 441 F.2d 689, 169 USPQ 597 (CCPA 1971). If the scope of the subject matter embraced by the claims is clear, and if applicants have not otherwise indicated that they intend the invention to be of a scope different from that defined in the claims, then the

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claims comply with 35 U.S.C. 112, second paragraph.” While Applicant disagrees that the particle size of the coarse and fine portions of the bottom ash must be recited under 35 U.S.C. 112, second paragraph, given that the specification discloses the particle sizes, in order to further the prosecution of the present application, Applicant has amended independent Claims 1, 9, 18, 26, 34, and 41 to recite that the coarse portion comprising a particle size between .75 inches to .003 inches and the fine portion comprising a particle size of less than .006 inches. Applicant reserves the right to submit claims in the present application or in a continuation application claiming priority thereto commensurate with the scope of the application as originally filed.

The Office Action asserts that the use of the term “between about” is indefinite because “between” indicates only values within the range and “about” indicates that values below and above the range are acceptable. Applicant submits that the meaning of the term “between about” is simply that the range includes values that run from about the lower limit to about the upper limit. While Applicant disagrees that the term “between about” is indefinite, in order to further the prosecution of the present application, Applicant has amended Claims 9, 18, 26, 34, 37, and 41 to delete the term “about”. Applicant reserves the right to submit claims in the present application or in a continuation application claiming priority thereto reciting “between about” commensurate with the scope of the application as originally filed.

The Office Action asserts that the transitional phrase “consisting of” must be used when claiming the compressive strengths of the composition because the support in the specification for achieving those compressive strengths is a composition consisting of cement, bottom ash (coarse and fine portions), and water and no other components. Applicant disagrees. The Federal Circuit has plainly held that “it is impermissible to limit the claims of a patent to examples shown in the specifications.” *Grain Processing Corp. v. American Maize-Products Co.* 840 F.2d 902, 910 (Fed. Cir. 1988). Thus, contrary to the assertions in the Office Action, there is no legal requirement that the claims be limited to a scope commensurate with the specific working examples described in the specification. Instead, an Applicant is entitled to a claim scope commensurate with the disclosure in the specification as a whole. Since the specification recites other materials that can be added to the cementitious compositions of the present invention (ll. 11-15, page 12), Applicant submits that the use of “comprising of” is definite.

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For the reasons discussed above, Applicant respectfully submits that Claims 1, 3-14, 17, 18, 20-22, 24-27, 29, 32-34, 36, 37, and 39-46, as amended, are definite and have adequate support for purposes of 35 U.S.C. § 112, second paragraph, and the rejection thereunder should be withdrawn.

The Objection to the Specification or Original Disclosure Should Be Withdrawn

The Office Action objects to the specification or original disclosure, asserting that the particle sizes for what was used for the coarse and fine portions of the bottom ash in the examples provided in Figures 7A, 7B, 8A and 9A to obtain the compressive strengths are not disclosed. Applicant disagrees. As noted above, Figure 7C provides a sieve analysis (*i.e.*, particle size analysis) for the fine and coarse portions of the bottom ash in each of the seven mixtures identified in Figure 7A and 7B; Figure 8B provides a sieve analysis for the fine and coarse portions of the bottom ash in the mixture identified in Figure 8A; and Figure 9B provides a sieve analysis for the fine and coarse portions of the bottom ash in the mixture identified in Figure 9A.

Accordingly, Applicant submits that the objection to the specification or original disclosure should be withdrawn.

The Rejections Under § 102 and § 103 Directed to the Claims Are Overcome

The Office Action rejects Claims 1, 3-14, 17, 18, 20-22, 24-27, 29, 32-34, 36, 37, and 39-46 under 35 U.S.C. § 102 (a) and (b) as being anticipated by or, in the alternative, under 35 U.S.C. § 103 (a) as obvious over U.S. Patent No. 5,849,075 to Hopkins et al., U.S. Patent No. 5,772,751 to Nisnevich et al., U.S. Patent No. 6,528,547 B2 to Shulman, U.S. Patent No. 6,030,446 to Doty et al., U.S. Patent No. 4,050,950 to Brewer et al., U.S. Patent No. 4,050,261 to Brewer et al., US Patent No. 3,961,973 to Jones, US Patent No.'s 6,676,744 B2, 6,676,745 B2, and 6,872,246 B2, and U.S. Published application 2005/0235883 to Merkley et al., as well as the abstracts of Korea Patent No. 2002055481 to Lee, Korea Patent No. 2002006569 to Lim, publication to Naik et al., and the publication to Lai. Applicant respectfully submits that the

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cited references do not teach or suggest, either singularly or in combination, the invention as claimed.

Specifically, independent Claims 1, 9, 18, 26, 34, and 41 recite a cementitious composition comprising a bottom ash and cement wherein the bottom ash comprises a fine portion and a coarse portion, wherein the coarse portion comprises a particle size between .75 inches to .003 inches and the fine portion comprises a particle size of less than .006 inches. In contrast, the Hopkins '075 patent, Nisnevich '751 patent, Shulman '547 patent, Dory '446 patent, Hironaka '940 Japanese patent, Kornemann '092 patent, Eun '290 application, Berg article, Gahfoori article, and Lai article, each disclose combining cement, bottom ash and other materials, such as silica fumes, fly ash, expanded Polystyrene, blast-furnace slag and other adjuvants and fillers. However, none of the cited references, either alone or in combination, teach or suggest a cementitious composition, a cementitious product, or a method of manufacturing a cementitious product, comprising bottom ash and cement wherein the bottom ash comprises a fine portion and a coarse portion, wherein the coarse portion comprises a particle size between .75 inches to .003 inches and the fine portion comprises a particle size of less than .006 inches. Notably, the Office Action does not assert that any of the cited references, either alone or in combination, teaches or suggests this feature of the claimed invention. Applicant submits that this feature of the present invention is important as it enables the creation of a more cost-efficient cementitious composition that is lightweight and capable of forming a structural product having high compressive strength.

Accordingly, it is respectfully submitted that independent Claims 1, 9, 18, 26, 34, and 41, as amended, and the claims depending therefrom, include recitations that patentably distinguish the claimed invention over the cited references and that the rejections directed to these claims be withdrawn.


* * * * *

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of

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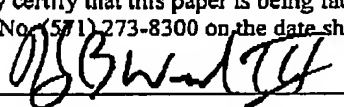
this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,


Henry B. Ward, III
Registration No. 42,212

Customer No. 00826
ALSTON & BIRD LLP
Bank of America Plaza
101 South Tryon Street, Suite 4000
Charlotte, NC 28280-4000
Tel Charlotte Office (704) 444-1000
Fax Charlotte Office (704) 444-1111

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